Urban Restoration, Challenges and Solutions

Within the Hudson Raritan Estuary

Logistics of Restoration in the Urban Environment

Peter M. Weppler,
Environmental Evaluation
Section Chief
U.S. Army Corps of Engineers
New York District

BUILDING STRONG!

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Logistics of Restoration in the Urban Environment

Definition

- Urban:

  of, relating to, characteristic of, or constituting a city

  (source: *http://www.merriam-webster.com/dictionary/urban)*

Logistics of Restoration in the Urban Environment

Urban Restoration

- What does this mean?
  - Scale of Projects
  - Costs of Projects
  - Limitations of Site Access
  - Visibility
  - Additional Design Considerations
- Specific Case Study
  - Elders Point East

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Scale of Projects

No matter what the scale, in an urban area, the increase in habitat will have an impact.

- Small Scale
  - Due to limited land availability
  - May create habitat island or refuge
- Large Scale
  - Brownfields reclamation
  - Mitigation opportunities
  - Rare opportunity for Urban contiguous habitat

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Costs Effectiveness

- Prevailing Wage Rate
- Supply Transportation
- Mobilization
- Supply Storage
- Site Security

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Site Accessibility

- Staging Area
  - Convenience and Accessability
  - Size
- Construction Vehicles
  - Roadway Restrictions
  - Wetland Capability
  - Secure Storage – tides and vandalism
- Remote Sites
  - Islands – boat access only
    - May require two staging areas
- Mobilization
  - May need to be highly coordinated
    - With agencies
    - Islands – Barges and Tugs

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Visibility

Urban projects will be highly visible.

- Agencies
- Non-governmental Organizations (NGO)
- Congressmen and Senators

Ideally this should be worked to the project's advantage.

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Background Facts:

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Background Facts:

- Mobilization – April 27 to June 7, 2006
- Site Construction – June 8 to June 2007
  - Pumping of Sand
    - » June 8, 2006 - Stockpile at Floyd Bennett Field
    - » July 21, 2006 – Amboy Aggregates Material
    - » September 8, 2006 – Ambrose Channel Material
  - Grading
    - » First acceptance area
    - » Ongoing with Sand Deliveries
  - Planting and Waterfowl Barrier
    - » June 21, 2006 - First Cell Planted
    - » August 23, 2006 - Planting Completed for 2006 Season
    - » June 30, 2007 – Planting Completed

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- Scale of Project:
  - Large Scale – 40+ acres of salt marsh restoration
  - Source – Mitigation Site for NY/NJ Harbor Deepening

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- Issues Due to Scale:
  - Quantities…..massive quantities
    - 249,000 cubic yards of sand to remote site
    - 700,000+ plant plugs planted 18”OC
    - 40+ acres of waterfowl barrier on 50’ x 50’ grid
  - Maintenance of Waterfowl Barrier
  - Time commitment for any field work
  - Due to larger site, smaller issues tend to be overlooked

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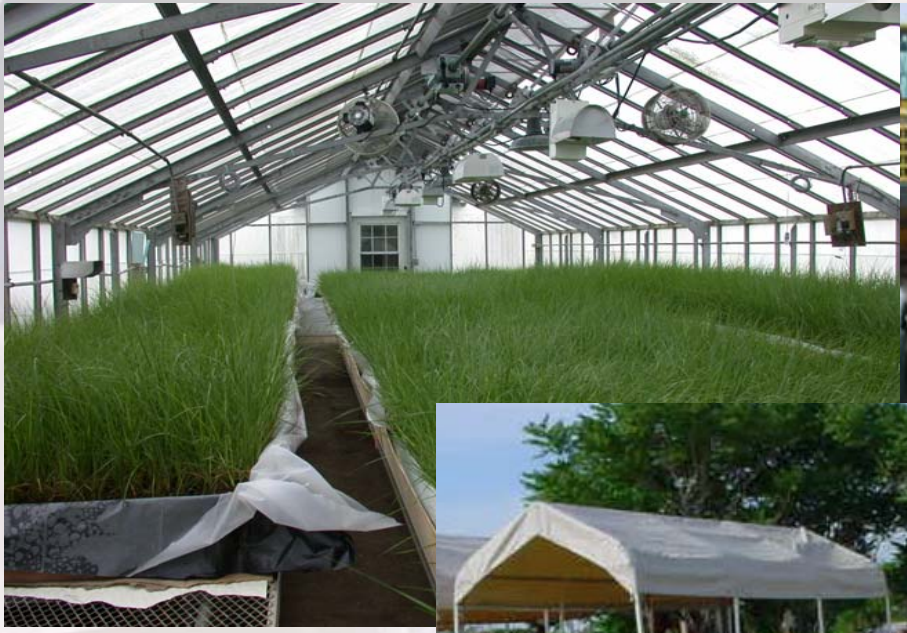

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Benefits of Large Scale in Urban Setting

- Contiguous Habitat Acreage
- Preserved in Perpetuity
- Community Partnerships
  - Restore Faith in Government
  - Forge relationships with Stewards
  - Positive Input for Future Work

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Cost Effectiveness

- Prevailing Wage Rate
  - College Students or Summer Employees Earned More than a GS-12 Per Hour to Shove Plants In the Ground
- Transportation Costs For Supplies
  - Proximity to Un-restricted Highways
  - Traffic and Construction
  - These lead to longer trip time, confusion and ultimately higher delivery costs.

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Cost Effectiveness

- Mobilization, Supply Storage, and Security
  - This site although large scale, was a remote site with no official main land connection.
  - Mobilization required the Contractor to locate a feasible waterfront access property that had enough space to securely store equipment and supply shipments.
  - Fortunately, they found an obscure piece of land that was closer than that proposed by USACE.
  - Security at this site was less than ideal. The costs of losing a few pieces of small equipment were far less than the investment in securing the property for temporary use.

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Site Accessibility

- Staging Area
  - This was left to the Contractor to utilize area given or find new location which better suit the project.
  - The Contractor found alternate location and used for base of his operations.
  - Site was unsecured and traditionally available for public access, so security was challenging.
  - Even with gates and locks, the site was not secure due to waterfront access.
  - This added time to all operations in the beginning to get organized from the lockup container and at the end of the day to secure the same equipment.

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Site Accessibility

- Staging Area (continued)
  - The staging area had its limitations for deliveries. It was narrow and turning radius was limited. Large tractor trailers were almost impossible to bring on site.
  - With large amounts of plant materials, the staging area's limitations made it difficult to unload efficiently.

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Site Accessibility

- Construction Vehicles
  - The grading dozer had a blade mounted survey unit attached which allowed for better accuracy the first time around.
  - Marsh buggies were utilized to access the areas that were unstable.
  - Care had to be taken only to use standard construction equipment in areas where the fill material had been previously placed and settled.
  - A secondary staging area had to be developed on the island itself on higher ground to ensure the safety of equipment and supplies during storm events and tides.

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Site Accessibility

- Remote Site and Mobilization
  - Approach to the island itself is very shallow on all sides, which made timing of work with the tides very crucial to project efficiency.
  - The use of barges and tug became essential for shipment of material on or off the island. The barge would be tugged in at high tide, loaded at low tide, and tugged out on the following high tide.
  - Mobilization took longer than a standard job due to the remoteness of the site. The pipeline had to be floated into place for several miles. The marsh buggy had to be floated out. Other large construction equipment was floated out by barge along with weekly gas tank deliveries.

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Project Visibility

- State Agencies
  - The NYS Department of State and NYS Department of Environmental Conservation have been project partners from the start and remain active within the project's Interagency Monitoring and Adaptive Management Team.
- NGO's
  - The Jamaica Bay Eco-Watchers were one of primary NGO's to get the concept of the marsh loss in Jamaica Bay on the radar. They have been supporting the project and continue to watch project progress.
  - The Jamaica Bay Taskforce also continues a watchful eye on the project and receives periodic updates from USACE.

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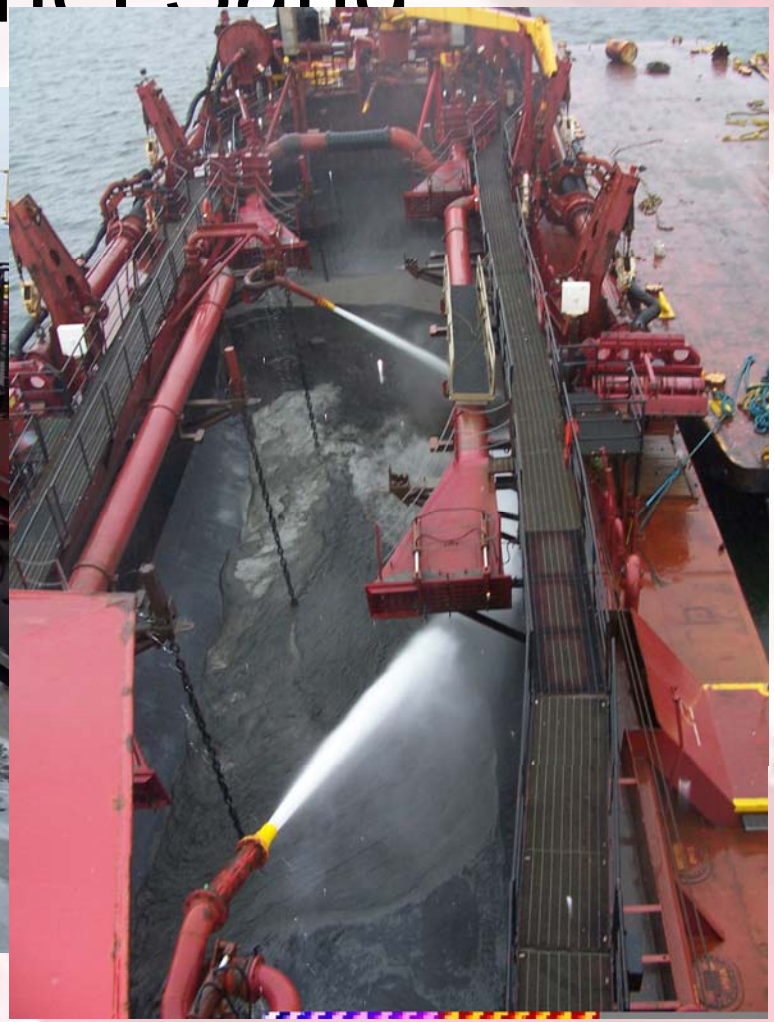
Site Construction

Site Construction: Floyd Bennett Sand

Site Construction:
Amboy Aggregate Sand

Site Construction: Ambrose Channel Sand



Site Construction: Sand Discharge Pipeline From Floyd Bennett

Site Construction: Special Equipment Used

Coir Logs

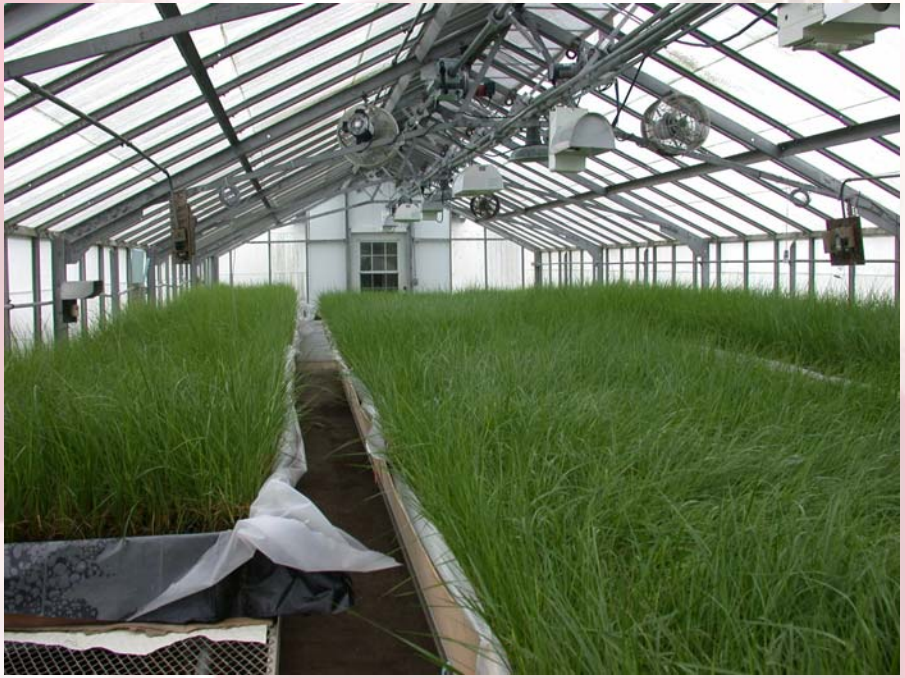
Coir Logs

Site Construction: Coir Logs

Site Construction: Grading

Grading

Site Construction: Planting & Waterfowl Barrier



Site Construction:
Planting & Waterfowl Barrier

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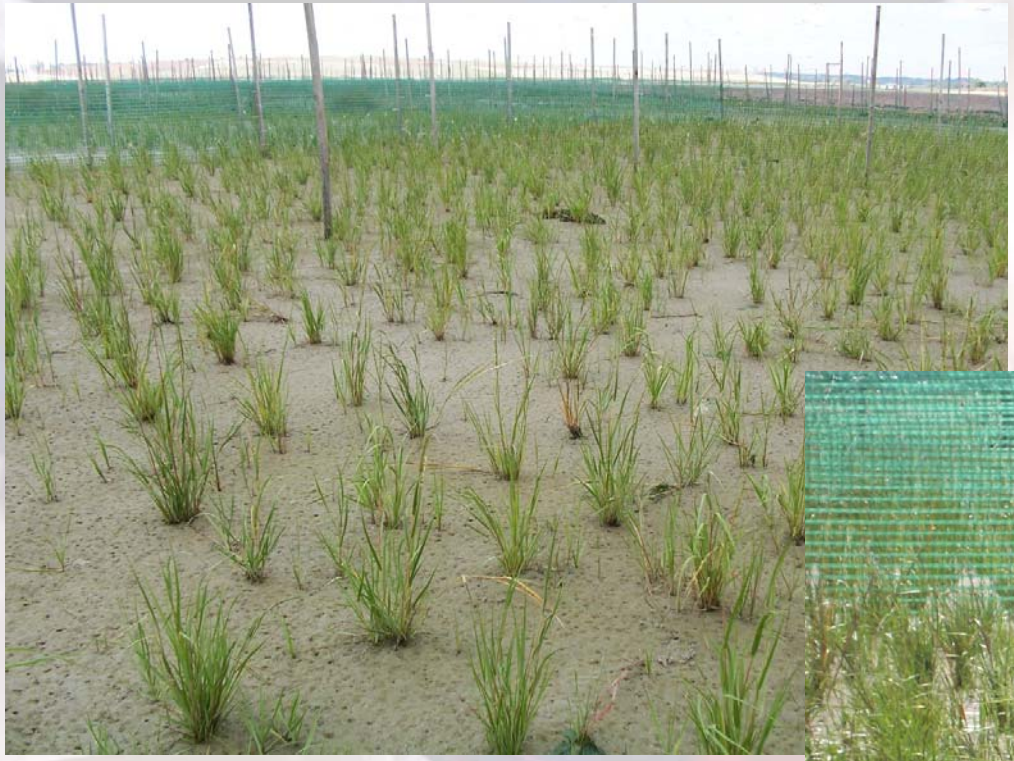
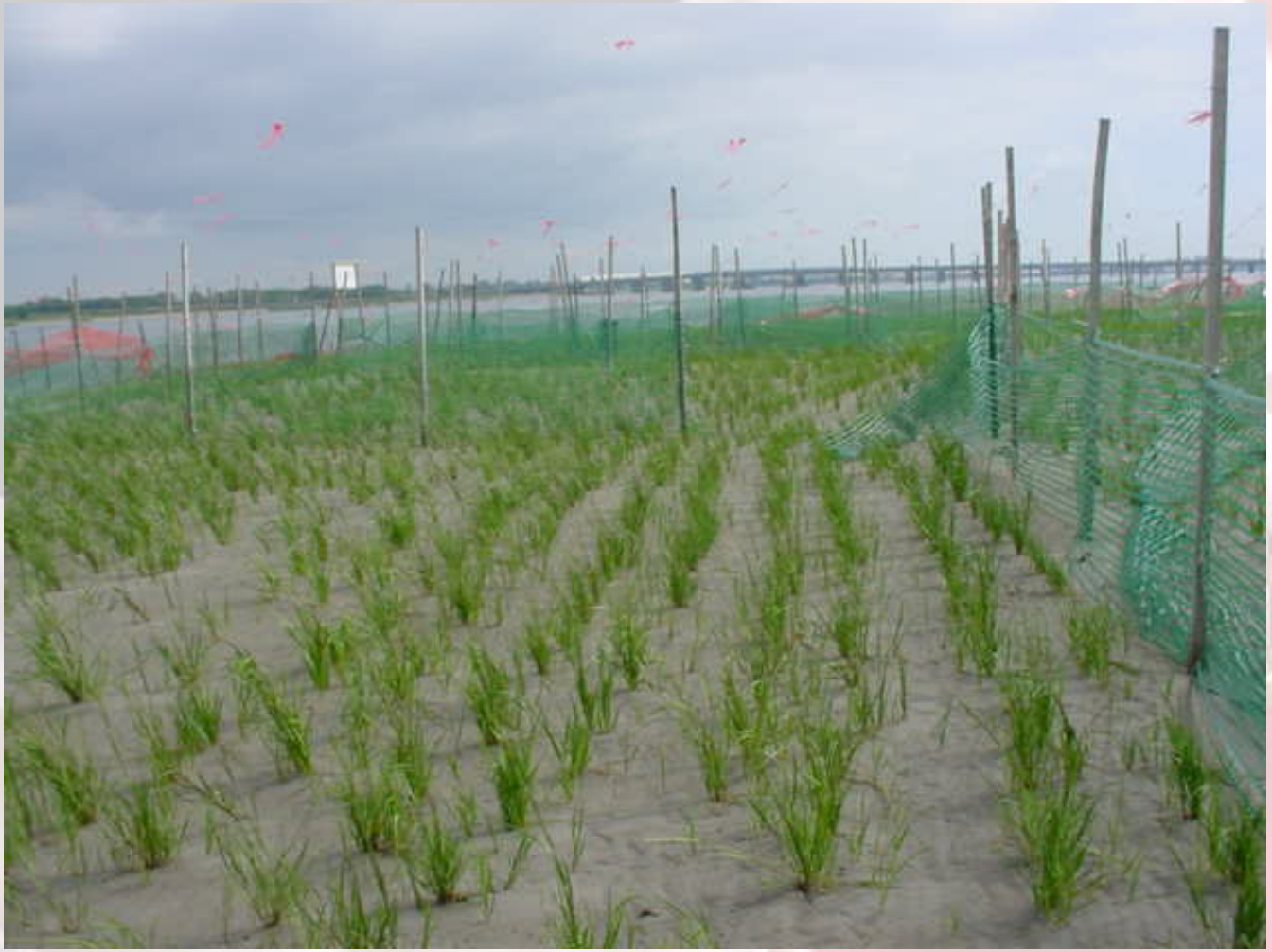
Site Growth: 2006



Site Growth: 2006



Site Growth: 2006

Site Growth: 2006

Site Usage

Site Usage

Where to From Here?

Questions??